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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,944	02/28/2002	Hiroaki Yamamoto	10873.897US01	4437
23552	7590	06/09/2005	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			PATEL, GAUTAM	
			ART UNIT	PAPER NUMBER
			2655	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/086,944

Applicant(s)

YAMAMOTO ET AL.

Examiner

Gautam R. Patel

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 4-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5-28-02.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 1-28 are pending for the examination.

#### Election/Restriction

2. Claims 4-28 are withdrawn from further consideration by the examiner, 37 C.F.R. § 1.142(b) as being drawn to non-elected groups II and III and non-elected species of figs. 7-10. Election was made with traverse of claims 1-3.

Applicant's election with traverse of group "A" [or group I] in Paper dated 1-10-05 is acknowledged. The traversal is on the ground(s) that "to the extent requesting that the non-elected Groups II and II be retained for possible reinstatement if elected claims are found allowable".

... Applicants respectfully suggest that the subject matter of the non-elected species [and] that of the elected species have a sufficiently close relationship that examination of the non-elected species would not represent an undue burden in the present application."

This is not found persuasive because, as to first request it should be pointed out that group II and II are totally different and also are in completely separate class from the group I that has been elected. So even if say group is found to be allowable it will have NO reflection at all on group II and III with respect allowability or not. Therefore it is advisable to cancel claims 8-28. As to claims 4-7 the Examiner agrees with the Applicants that it may be kept in the case and if

claim 1 may be allowed than these claims and other species may be joined underneath of claim 1.

As to argument regarding species being sufficiently close is not found persuasive because if they are obvious variations than considered them rejected based on the rejection of the elected species and if they are not obvious variations than it definitely will require different search. Even to find if they are different or not will require different search. So argument that it will not be extra burden is not found persuasive at this time.

The requirement is still deemed proper and is therefore made FINAL.

Action on the elected claims 1-3 follows.

#### **Priority**

3. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

#### **Specification**

4. The disclosure is objected for following reasons.

The title of the invention is neither precise nor descriptive. A new title is required which should include, using twenty words or fewer, claimed features that differentiate the invention from the Prior Art. It is recommended that the title should reflect the gist of or the improvement of the present invention.

Correction is required.

#### **Claim Rejections - 35 U.S.C. § 103**

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA [Applicants admitted Prior Art] specification page 1-2 (hereafter AAPA) in view of Hosaka et al., US. patent 6,291,117 (hereafter Hosaka).

As to claim 1, AAPA discloses the invention as claimed [see Figs. 11], including a recording layer and three-dimensional storage comprising:

a recording layer [fig. 11, unit 103], in which information is recorded in three-dimensional manner in an in-plane direction and a thickness direction of the recording layer [specification, page 1-2 and fig. 11].

AAPA discloses all of the above elements, including three-dimensional recording. AAPA does not specifically disclose that other materials such as thermochromic materials can be used for the three-dimensional storage, whose color changes reversibly to the extent claimed.

However, use thermochromic materials for the three-dimensional storage has been well known the art for a very long time [see US patent 3,873,181].

Also Hosaka clearly discloses that:

thermochromic materials whose color changes reversibly according to a temperature [ABSTRACT and col. 2, lines 38-50]].

Both AAPA and Hosaka are disclosing heat sensitive materials for storage of information.

One of ordinary skill in the art at the time of invention would have realized that the system of AAPA could use good contrast for image storage and retention of the images on its storage.

Therefore, it would have been obvious to have used a reversible heat sensitive recording material in the system of AAPA as taught by Hosaka because one would be motivated to provide a material which is excellent in resistance and free from distortion caused by light and erasing failures in the system of AAPA and provide a capability of retaining stable image over passage of time [ABSTRACT and col. 2, lines 27-32; Hosaka].

6. Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA and Hosaka as applied to claim 1 above, and further in view of Fischer et al., US. patent 5,481,002 (hereafter Fischer).

AAPA & Hosaka discloses all of the above elements, including three dimensional recording and reversible heat sensitive thermochromic recording material. The combination does not specifically disclose that the recording material can change irreversibly to translucent substance to the extent claimed.

However, new compounds have been found which are irreversibly thermochromic.

Also Fischer clearly discloses that:

thermochromic material changes irreversibly to a translucent substance whose color does not change according to a temperature change, when the temperature reaches a first predetermined temperature or higher [col. 1, lines 19-29 and col. 8, lines 49-62].

All AAPA, Hosaka and Fischer are disclosing heat sensitive materials for storage of information.

One of ordinary skill in the art at the time of invention would have realized that the system of AAPA could use simple diodes for recording and reading information, thus saving money on components.

Therefore, it would have been obvious to have used a irreversibly thermochromic compounds as a recording material in the system of AAPA & Hosaka as taught by Fischer because one would be motivated to provide a material which is excellent in higher reflectance or lower absorption, thus increasing the efficiency and recording density of the AAPA & Hosaka's systems [col. 1, lines 13-20; Fischer].

7. Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA and Hosaka as applied to claim 1 above, and further in view of Khaldi, US. patent 6,500,555 (hereafter Khaldi).

AAPA & Hosaka discloses all of the above elements, including three dimensional recording and reversible heat sensitive thermochromic recording material. The combination is silent about light absorption being constant at a certain temperature.

However, Khaldi clearly discloses:

thermochromic material has a light absorptance that is constant at a temperature lower than a second predetermined temperature and increases as the temperature rises at the second predetermined temperature or higher [col. 12, line 66 to col. 3, line 20 lines 19-29 and col. 8, lines 49-62].

All AAPA, Hosaka and Khaldi are disclosing heat sensitive materials for storage of information.

One of ordinary skill in the art at the time of invention would have realized that the system of AAPA could use simple or self-sufficient temperature control or automatic control without any external source of energy.

Therefore, it would have been obvious to have used an automatic temperature control in the system of AAPA & Hosaka as taught by Khaldi because one would be motivated to reduce the cost of system by avoiding the use of the external heating source [col. 3, lines 15-20; Khaldi].

#### **Other prior art cited**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Chivian et al. (US. Patent 3,873,181) "Infrared correlation ....."
- b. Pathak et al. (US. patent 5,741,323) "Polymeric article ..."
- c. Twarowski (US. patent 6,652,778) "Reversible thermochromic ..."
- d. Byker et al. (US. patent 6,446,402) "Thermochromic devices"
- e. Barzynski et al. (US. patent 4,555,471) "Image-recording materials ..."

#### **Contact Information**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is 571-272-7625. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.



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Art Unit: 2655


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The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is 703-872-9306.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Wayne Young can be reached on (571) 272-7582.

Any inquiry of a general nature or relating to the status of this application should be directed to the Electronic Business Center whose telephone number is 866-217-9197 or the USPTO contact Center telephone number is (800) PTO-9199.

Gautam R. Patel  
Primary Examiner  
Group Art Unit 2655

  
**GAUTAM R. PATEL**  
**PRIMARY EXAMINER**

June 4, 2005